ISSN 0409-7467

CSIR NEWS

A SEMI-MONTHLY HOUSE BULLETIN OF CSIR

Food Science & Technology Information Service
24 DEC 1981
C.F.T.R.I., MYSORE

VOL 31 NO 22 30 NOVEMBER 1981

NAL fabricates rig for measuring 'roll-damping' on spinning, sounding rocket models

kets and missiles are sometimes gned to spin continuously for eving reduced dispersion and also nced stability in flight. Owing to spinning motion fins fixed on the y of the rocket experience an dynamic moment which usually oses the rocket's rolling motion. A wledge of the magnitude of this ng moment, generally known as -damping', is essential for the design development of such rockets and iles. Theoretical methods of es-ting roll-damping are often re-tive in scope as the accuracy eved is inadequate, particularly at sonic speeds. Consequently reliable mates of roll-damping on practical ket configurations are best obtained ough wind-tunnel tests.

The National Aeronautical oratory (NAL), Bangalore, has gned, developed and fabricated a rig to undertake roll-damping surements on spinning models in the m trisonic wind tunnel. The rig was narily developed under the sponsor-of the Indian Space Research ganisation, who needed roll-damping a on the sounding rockets designed them. The model and its sting port, which normally are rigidly d in conventional wind-tunnel tests, mounted on ball bearings located in test section. A variable-speed electric tor in conjunction with an electronic ed controller drives the model at eds of up to 2000 rpm. A highly sitive internal strain gauge balance asures the rolling moment experien-by the model. The balance, designed specially for these tests, is of floating-frame type and can measure rolling moments of up to 15 kg-cm with a resolution of 0.0013 kg-cm. The balance signal is led outside through a slip-ring located in the tunnel.

The rig was tested in the laboratory's 0.3 m tunnel with a standard calibration model at subsonic, transonic and supersonic speeds. Excellent agreement with other experimental results validates the measurement technique adopted in the rig.

Subsequently, scaled models of two rocket configurations supplied by Vikram Sarabhai Space Centre (VSSC) were tested at Mach numbers ranging from 0.500 to 3.00. The rotational speeds of the models in tests were set between 600 and 2000 rmp to correctly simulate the flight conditions. Nine variants of the model configurations were tested to investigate the effects of configuration changes. The test results were analyzed and supplied to VSSC.

These studies have established NAL's competence in conducting specialized tests on spinning models in high-speed tunnels. The rig, which is capable of generating roll-damping data on scaled models, would be extremely useful in the design and development of rockets and missiles in the country. □

White pepper powder from black pepper

India's potential for exporting white pepper which is a value-added product could be substantially improved if a new process developed by the Regional Research Laboratory (RRL), Trivandrum, for producing white pepper powder from black pepper is commercially exploited. India's annual exports of white pepper amount to only about 6 tonnes as against about 125 tonnes of pepper oleoresin and about 21,000 tonnes of black pepper. It is estimated that about 10,000 tonnes of the world's pepper production is in the form of white pepper, Indonesia and Malaysia being the principal producers.

India's low contribution to export market in white pepper is because of not allowing pepper berries to ripen in the plant itself to avoid losses through falling berries. The skin of ripened pepper peels off easily. An alternative traditional process used in Indonesia, Malaysia and, to a very limited extent, in India is by retting or steaming black pepper followed by abrasion. However, in this process there is a weight loss of about 20% corresponding to the skin.

The process developed by RRL-Trivandrum consists in dry-grinding black pepper and subjecting the powder to fractional separation. Through this process, white part of the black pepper can be marketed as white pepper powder and the residual black skin can be used for extraction of pepper oil and pepper oleoresin. □

Inside

Digital position readout system ... 162

Fibre optic clinical headlamp ... 162

An improved method for preparation of pure alpha-foetal protein ... 164

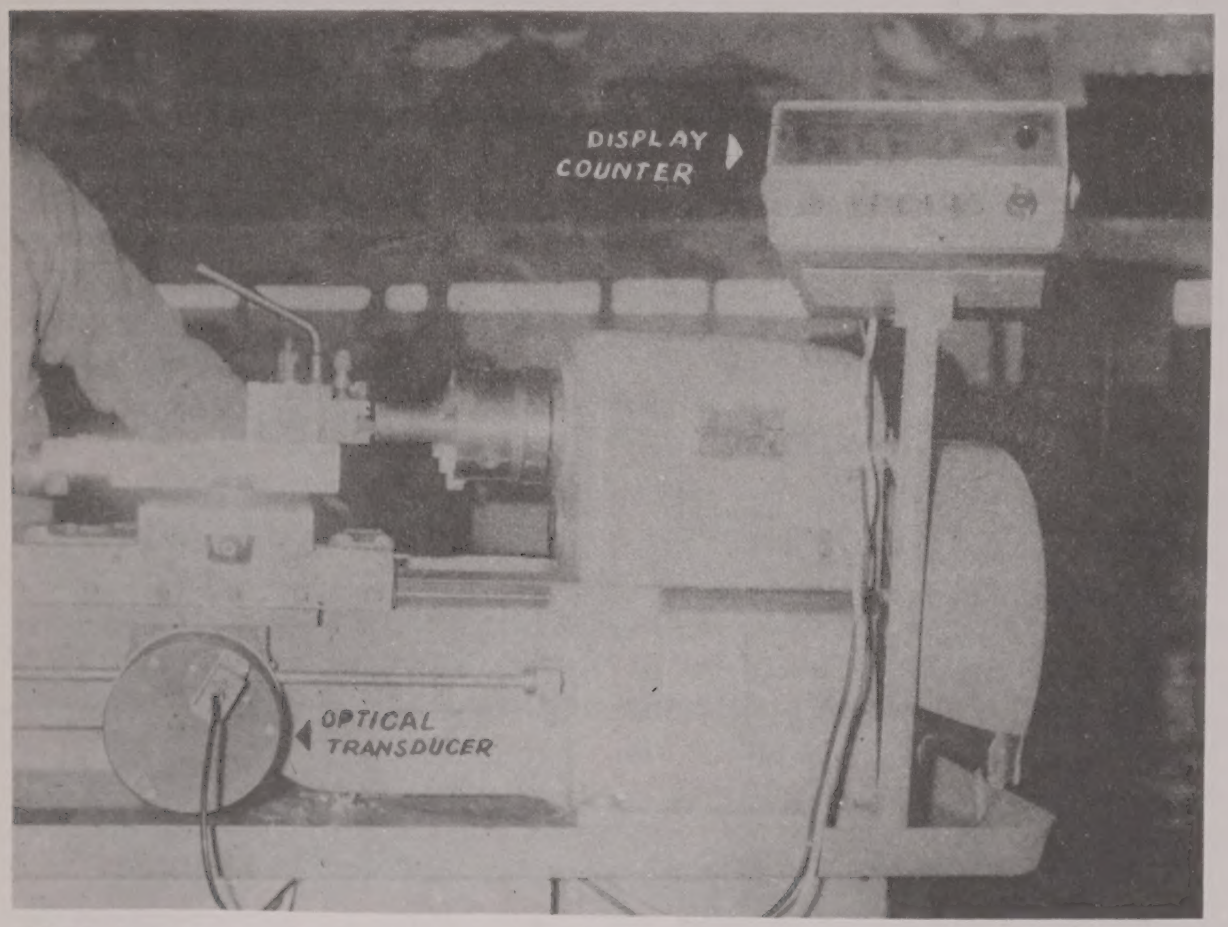
Dr B. Singh appointed CMRS Director ... 167

CSIO develops digital position readout system

For monitoring precisely the tool movements on machines, the Central Scientific Instruments Organisation (CSIO), Chandigarh, has designed and developed a digital position readout system. The system gives continuously, through digital display, the tool and slide position even when machining is in progress, thus eliminating the need for conventional measuring instruments like vernier callipers and micrometers which can be used only when the machine is stopped. The readout can be retrofitted on existing machines to provide a significant increase in performance, both in terms of overall productivity and accuracy. It has the advantage of eliminating errors arising from backlash in mechanical transmission. It is also insensitive to dirt, coolant and swarf.

The system comprises an optical transducer and an electronic digital position readout. It provides a measuring range of 1 m with a resolution of 0.005 mm. The optical transducer is based on the Moire fringe phenomenon and consists of an improvized light source, a set of photodetectors and a pair of optical gratings assembled in a unique configuration. Displacement is read on a six-digit, high-intensity, seven-segment LED display.

The readout has a provision for datum setting. This reduces the set-up time. Moreover, the operator need not carefully count the revolutions of hand-wheel based on which displacements have to be calculated. Zero-point setting is possible at any point within the measuring range and the set-up position can be used as reference by resetting, thereby eliminating the need for fixtures. Integrated circuits are used on plug-in printed circuit boards for easy handling and maintenance.



Digital position readout system, comprising an optical transducer and a display counter, designed and developed by CSIO, Chandigarh. The system is used for monitoring precisely tool movements on machines. It gives a continuous digital display of the tool and slide position even when machining is in progress—its principal advantage over conventional measuring instruments like vernier collipers and micrometers which can be used only when the machine is stopped. The prototype is expected to be handed over to the Hindustan Machine Tools, Pinjore, for trials.

Specifications

A digital position readout is to used on machine tools where accuracy of 5 μm is required.

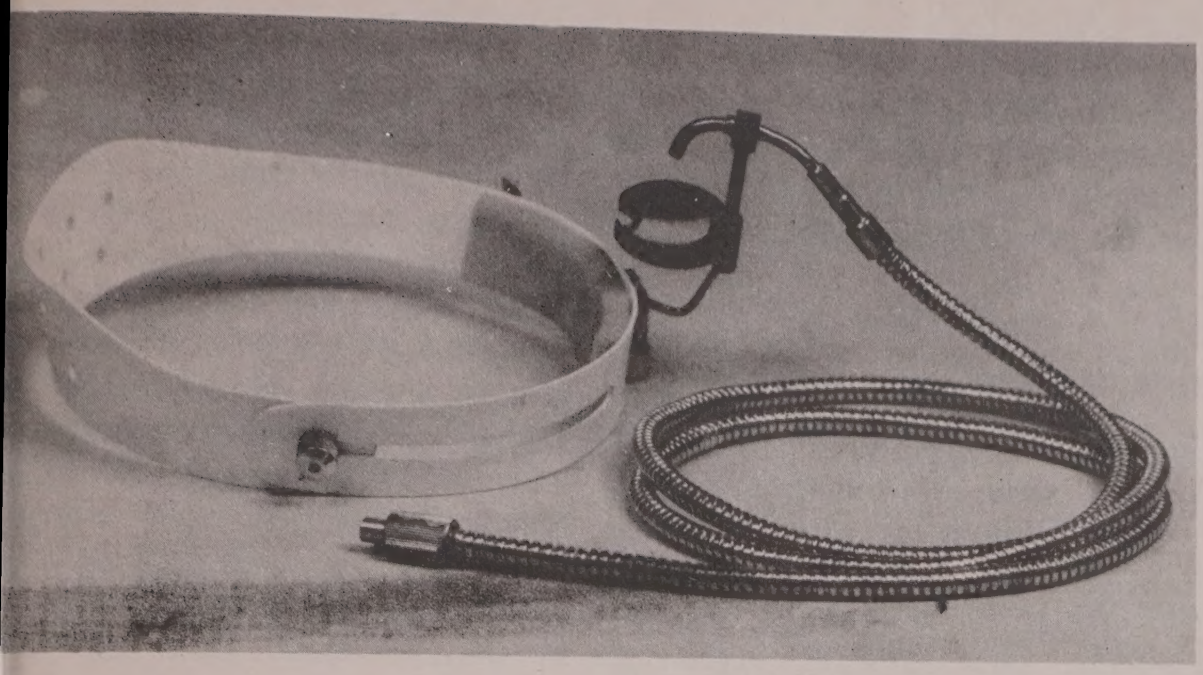
Digital reading	:	6-digit 7-segment hi intensity LED displ
Resolution	:	0.005 mm
Measuring range	:	1000 mm
Traversing speed	:	30 m/min.
Light source	:	GaAs infrared li emitting diode
Preset	:	The display can preset to any value means of a set thumb-wheel switc on the panel and entered into the displ by pushing the pre button.
Reset	:	The display is zero by pushing the set ze button mounted on t panel.
Mains	:	220 V ± 10% ac, Hz, 40 W
Dimensions		
Readout	:	325 × 285 × 120 mm
Transducer	:	135 (dia.) × 120 (dept mm.

The instrument finds application i machine tools and related machinery a a digital position display; as a feedbac system in numerically controlled ma chines; and for X-Y measurements i drafting machines and coordinat measuring machines.

With its estimated cost considerabl less than that of a similar imported unit it will effect a considerable amount o savings in foreign exchange. □

Fibre optic clinical headlamp

The Central Scientific Instruments Organization, Chandigarh, has de signed and developed a fibre optic clinical headlamp, an instrument used by surgeons for illuminating the body parts under observation. The headlamp consists of a 1.5 m long fibre light-guide, one end of which is connected to a light source. Light from the source (after filtering the heat) is transported through the fibre light-guide to a concave mirror fixed on the headbelt. The light gets



Fibre optic clinical headlamp—used by surgeons for illuminating body parts—designed and developed by CSIO, Chandigarh. It has many advantages over the conventional headlamps in which adequate illumination is not possible and the heat produced by higher-wattage bulbs, if used, can damage sensitive body tissues. The heart of the system is the fibre light-guide the technology for which also CSIO has developed. The prototype of the headlamp has been given to the Post-Graduate Institute of Medical Education and Research, Chandigarh, for trials.

flected from the mirror and produces n intense spot of 35 mm dia. at a stance of about 6 in.

In conventional headlamps, a small ectric bulb of low intensity is used hich does not provide adequate umination. In these headlamps, higher attage bulbs cannot be used because of eir bigger size and the generation of an xcessive amount of heat. The heat roduced by the bulb can damage the nsitive body tissues under exam- nation. These limitations of con- ntional headlamps have been success- lly overcome in a fibre optic adlamp. Here, a high-intensity light ource is used because it can be kept at a nvenient place away from the patient nd the heat produced can be removed y filtering out the infrared.

The most important part of a fibre ptic headlamp is the fibre light-guide. he technology for making optical bres has been developed. A semi- utomatic fibre-drawing machine has een designed and built. The fibres have een used successfully for fabricating arious types of assemblies (or bundles) ke non-aligned light-guides, aligned ght-guides, and multiple fibres. A different combination of these light-guides can be used for developing various types of industrial and, especially, medical endoscopic instruments.

The cost of an imported fibre optic headlamp is about Rs 3000, whereas headlamps manufactured using indigenous know-how should not cost more than Rs 2000 apiece. □

New lignite sources in Rajasthan found

While drilling a tube-well in Nagaur dist., Rajasthan, the state authorities encountered a lignite horizon at a depth of 92 m from the surface. Exploratory borehole cores received from the authorities and processed at the Central Fuel Research Institute's Coal Survey Laboratory at Jammu have revealed the presence of a 6 m thick lignite horizon in the area split into two sections with intervening carbonaceous bands of 0.3 m thickness. The ash contents of sections vary from 19.3 to 26.0%, and the sulphur content is 1.8%.

Studies on tar and gas yields in low-temperature carbonization have shown satisfactory results. Beneficiation of Jammu coals and their briquetting possibilities with locally available binders and the abatement of the obnoxious sulphur smell from the briquettes are being investigated. □

CFRI's process for demineralization of coke

Following the development of chemical demineralization of coal and production of low-ash coke from it, the Central Fuel Research Institute (CFRI), Dhanbad, has now worked out a process for direct demineralization of high-ash coke down to as low as 5-7% ash content, followed by agglomeration to desired size-consist and hardening by an auto-hardening agent. Demineralized coke may not only be suitable for blast furnace practice but could also be used with advantage in the manufacture of calcium carbide. □

Semi-mechanized brick plant installed at Pathankot

A semi-mechanized brick machine and a high-draught kiln, both designed and developed by the Central Building Research Institute, Roorkee, have been installed at Shahpur Kandi, near Pathankot, by the Superintending Engineer, Thein Dam (Township) Circle. The machine is producing about 18,000 wire-cut bricks per 8-hr shift. As the kiln has a capacity to burn 30,000 bricks per day, about 12,000 hand-moulded bricks are also produced daily. While machine-made bricks are dried on the floor of drying sheds (total covered area, about 3000 m^2), hand-made bricks are dried in the sun.

The high-draught kiln is fired with coal, which is crushed in a jaw crusher to −10 mm size. Draught is produced by an induced draught fan with a discharge capacity of 425 m^3/min. An operating draught of 50 mm (w.g.) is maintained. Power required for running the fan (12 kW) is available round the clock.

The average consumption of coal has been maintained around 380 quintals per round, which works out to 10.6 tonnes per lakh of bricks. This

compares very favourably with the conventional Bull's kilns operating in the same locality in which the consumption of coal averages 17 tonnes per lakh bricks. Further, the bricks burnt in the CBRI kiln are superior to those fired in the conventional kiln.

The Thein Dam authorities are planning to establish a second high-draught kiln of similar capacity. □

An improved method for preparation of pure alpha-foetal protein*

Alpha-foetal protein (AFP), a serum glycoprotein, is synthesized and secreted into the blood by the yolk sac, liver and gastro-intestinal tract of the foetus in some mammalian species, including humans. Its concentration in the serum decreases steadily with the growth of the foetus and it is hardly detectable in adults, but may show an increase in certain pathological conditions, particularly tumour of germ cells and liver. Surgical removal of the tumour results in the disappearance of the serum AFP. During pregnancy, AFP enters the amniotic fluid and maternal serum, and abnormally high levels of AFP in these compartments are an indicator of foetoplacental dysfunctions. Thus AFP assay is of diagnostic value for early detection of hepatocarcinoma, assessment of successful surgical removal of tumour, and, what is more important, pre-natal diagnosis of congenital malformations like open neural tube defects, spina bifida, congenital nephrosis, duodenal and oesophageal artresia.

In USA a mass programme of AFP testing has been recently launched to detect neural tube defects in unborn babies with a view to deciding on medical termination of pregnancy. Such defects are found in one or two babies per thousand births in USA. Major congenital malformations are a serious problem in India also, although accurate figures of their incidence are not available. The availability of cheap and reliable AFP test kits would facilitate carrying out of AFP assay of pregnant women on a mass scale in this country and mothers could then be advised to undergo abortion to prevent births of babies with congenital defects.

Assay methods for AFP are immunological and require a mono-specific antibody against AFP, and to raise this antibody, pure AFP is necessary. Masarrat Ali and M.K. Sahib of the Central Drug Research Institute, Lucknow, have developed a simple and rapid two-step procedure for the preparation of pure human AFP from foetal (human cord) serum or amniotic fluid. Presently available methods for its preparation are multi-step and time-consuming, the yields are poor, and the AFP is contaminated with the physico-chemically very similar albumin. The new method involves removal of the adult serum proteins present in the amniotic fluid or serum by direct negative immunoabsorption with anti-normal human serum IgG at optimal precipitation proportion, leaving AFP in the supernatant along with excess IgG. The latter is then removed by DEAE cellulose chromatography. Immunochemically and electrophoretically homogeneous AFP is obtained in 80% yield. An important advantage of this procedure is that specific anti-serum, which may not be initially available, is not required.

The pure AFP prepared by this method has been successfully tried for estimating AFP levels in amniotic fluid and cord serum samples of pregnant women, at the Department of Gynaecology and Obstetrics of the K.G's. Medical College, Lucknow, by means of rocket immunoassay. Attempts are now being made to develop an enzyme-linked immunoassay to detect minute amounts of AFP in sera of normal adult human beings. □

*A brief note has been published in *CN*, 31 (1981), 157.

Organic production of inshore waters of the Arabian S

In order to determine the levels biological productivity in the insh waters of the Arabian Sea including estuaries and backwaters, four imp tant areas on the west coast of Ind namely Cochin, Goa, Bombay a Navapur, were studied to understa how the echosystems at these pla function. The researcher was S S.A.H. Abidi of the National Instit of Oceanography's regional centre Bombay, who used some of the physic chemical and biological parameters estimate the productivity.

The study showed that the h drography of the Cochin backwater w greatly influenced by two main facto short-term changes induced by the da tides, and seasonal changes broug about by the monsoon. The influx freshwater from land runoff and hea rainfall also was found to affect t hydrography of the coastal waters Kerala. The backwater system Cochin is, therefore, an estuarine syste where peaks in primary production a largely contributed by the two mo soons. The water becomes very turb and gets enriched with nutrien Changes in hydrographic condition such as salinity, light penetration an nutrients, during the different seasons the year seem to govern the rate primary production. In the Coch inshore water the conditions rema largely stable except during th monsoon period. Changes in salini and nutrients do not become abrup and, therefore, primary productio remains uniform. Although the tot chlorophyll recorded in the insho waters is lower than that of th backwater, the paeophytin content i the inshore area is lower than in th backwater systems. Goa estuarie (Mandovi and Zuari) are influenced b the monsoon cycle. The marin influence in the Goa estuaries is greate than in the Cochin backwater. Th productivity in the backwater appear to increase during the monsoon and pr

oon periods. But it becomes low the salinity is lowest during the oon. In the inshore waters, on the hand, productivity is highest (584 C/m^3) per day at the surface during ost-monsoon season, but decreases 28.7 mg C/m^3 during the pre-soon and to 166.8 mg C/m^3 per day ng the monsoon periods. Thus the x of freshwater and turbidity ears to decrease the rate of luctivity in the backwater, which vs brief pulses during the monsoon. he production in the Mandovi (Goa ary) appears to be greater during the nsoon and decreases in the pre-nsoon from 501 to 246 mg C/m^3 per , whereas in Zuari (Goa estuary) the duction is low and ranges from 200 216 mg C/m^3 per day during the nsoon and pre-monsoon conditions. s indicates that greater marine uence in Zuari (Goa estuary) affects primary production.

n the Bombay water, four stations resenting different stages of pol-on were studied. Of these, Mahim d Thana were highly polluted. At rsova the environment was relatively an and the harbour represented an ermediate stage. Here the effects of lution, on the productivity were very ar. Organic production at all the tions was lower as compared to that Cochin water (backwaters and hore region) and also with the Goa uaries. Among the four stations in mbay the highest production was served at Versova, which again shows t the pollution from both organic d inorganic sources limits the solved oxygen which in turn affects rate of primary productivity.

In Navapur waters, higher con-ntration of inorganic phosphorus, rate-nitrogen and nitrite-nitrogen re observed. Chlorophyll production a diurnal study showed peak values in forenoon and low values in the ernoon. From the chlorophyll and oplankton values the area appears to quite productive.

Shri Abidi, who worked under the idance of Dr S.Z. Qasim, was awarded Ph.D. degree in zoology by the Aligarh Muslim University, Aligarh. □

Biochemical and metabolic studies on spices

The effect of feeding red pepper (*Capsicum* sp.), over both short- and long-term periods, on growth, feed efficiency ratio, blood constituents, nitrogen balance and histopathology of various organs of rats has been investigated at the Central Food Technological Research Institute (CFTRI), Mysore. The researcher was Shri K. Sambaiah of CFTRI's Discipline of Biochemistry and Applied Nutrition.

The results indicate that red pepper at 5% level in the diet increases food intake, weight and FER at 4 and 8 weeks. Different blood constituents and nitrogen balance were not affected. Red pepper or capsaicin, its active principle, had no adverse effect on fat absorption. Both red pepper and capsaicin partly counteracted the accumulation of triglycerides caused by high-fat feeding, choline deficiency or ethionine or carbon tetrachloride administration.

Administration of Triton WR-1339 to capsaicin-fed animals indicated that the transport of fat from liver to blood was enhanced. The hypertriglyceridemic effect of fructose was counteracted by capsaicin feeding, indicating the possibility of inhibition of lipogenesis in the liver. Assay of key lipogenic enzyme activities showed that they were lowered in capsaicin-fed animals. The body fat content of animals fed red pepper capsaicin was also low. Incorporation of acetate-1-^{14}C into liver lipids indicated that the specific activities of total lipids, triglycerides and cholesterol were higher in capsaicin-fed animals. Data with palmitic acid-1-^{14}C incorporation confirmed the possibility that capsaicin facilitates the transport of triglycerides from liver. Oxidation of fatty acids by liver slices using palmitic acid-1-^{14}C was not altered by capsaicin feeding. Further, red pepper and capsaicin exhibited hypocholesterolemic activity in rats fed an atherogenic diet containing cholesterol.

Shri Sambaiah was awarded Ph.D. degree by the University of Mysore for his thesis based on the study. □

PROGRESS REPORTS

CBRI Annual Report: 1980

A high point in the progress of R&D work of the Central Building Research Institute (CBRI), Roorkee, during the year 1980, according to its annual report published recently, is the building industry's successful utilization of the results of CBRI's researches as a result of the technical assistance provided by the institute. One of the processes utilized is the stone block masonry, which has received considerable attention in places where bricks are costly. At Dak Pather (Dehra Dun), where this technique has been adopted, double-storeyed houses and a number of single-storeyed dormitories were in an advanced stage of construction under the 'Lakshwar Vyasi Yojna' project. The Uttar Pradesh Irrigation Department was constructing, by the same technique, 90 houses in three storeys and four hostels at Koti (Dehra Dun); at Pant Nagar University 24 such houses were under construction.

Other CBRI techniques, viz. single-brick-thick load-bearing walls, precast thin lintels, RCC plank flooring/roofing, and single-stack system of plumbing, were being utilized by the Uttar Pradesh Public Works Department for construction of 80 houses in four-storeyed blocks at Lucknow under the National Buildings Organisation's experimental housing scheme. About 5,000 houses were also constructed by the use of these techniques for the rehabilitation of cyclone-affected victims of Andhra Pradesh and flood-affected victims of Morvi.

In the area of building materials, the institute has developed a cementitious binder from lime sludge (from acetylene plant) and fly ash for use in masonry mortars and plasters, precast stone building blocks, and foundation and

flooring concretes. This project was sponsored by Shriram Chemicals Industries, Kota. In another project, sponsored by Fertiliser Corporation of India, the institute beneficiated phosphogypsum anhydrite plaster for use as a building material. With additives the phosphogypsum anhydrite plaster was found suitable for use in masonry mortars and internal plastering, production of lightweight blocks and acoustic tiles. Without additives the plaster was found suitable for use in the production of supersulphated cement. Other projects successfully concluded in the field of building materials relate to the production of bricks from red soils of Ramagundam, design and development of lime kilns, development of a hydraulic binder from limestones, and activated like pozzolana mixture.

In the field of soil engineering, a study of skirted granular pile foundation showed that timber pile skirting can be used as an alternative to cement concrete or pipe skirting. Based on a survey carried out of soil sampling practices in India the institute established a relationship between the cutting edge angle and area ratio, which has been incorporated in the International Manual on Soil Sampling.

In the discipline of efficiency of buildings the roof surface evaporative cooling system developed by CBRI earlier was successfully adopted in a few industrial and office buildings and a water-actuated switch was developed for automating the functioning of sprinklers. An efficient and low-cost chimney for kitchens was developed [*CN*, 31 (1981), 156]. The thermal performance of various building sections was evaluated for different climatic zones, and a comfort index was worked out.

To facilitate handling of several prefabricated building components which the institute had earlier developed, a simple mechanical hoist was developed which can lift and place units of up to 250 kg up to four floors. The institute also compiled a design handbook to aid practising engineers in adopting the prefabricated components.

In the area of fire research, the institute carried out field trials on its fire-retardant treatment of thatch in villages round about Roorkee and found that the treatment withstands weathering satisfactorily, is durable, and prolongs the life of thatches by two to three times.

The institute investigated 77 consultancy projects, including 37 taken up during the year, and completed 40 of them; besides, it concluded five of the 19 sponsored projects investigated during the year.

Ten processes/products were licensed to industry: these related to rapid-setting lime plaster, woodwool board, bored compaction piles, silicate based waterproofing formulation, solar water heater (domestic model), low-cost solar dryer, high-draught brick kiln, lime hydrating machine, under-reaming tool, and cement paint. The process relating to a new corrosion inhibiting pigment was assigned to the National Research Development Corporation of India for commercial exploitation. Eighty-four papers were published. □

Gaon ke Karigar aur Science (Village Artisans and Science)

The proceedings of the workshop 'Gaon ke Karigar aur Science' ["Village Artisans aur Science" (*sic*)] have just been published. The workshop, organized jointly by CSIR's Management Development Centre in R&D and the Agricultural Tools Research Centre, Bardoli (Gujarat), and held in October-November 1979 at Bardoli, sought to improve the skills of the rural artisans through judicious application of the methods of modern science and technology. For a brief account of the workshop, *see CN* 30 (1980), 1.

The 186-page (A4) publication contains, besides the theme paper, seven area papers: (1) Cereals process and product technology; (2) Economic and medicinal plants cultivation and processing technology; (3) Edible and nonedible oil process technology; (4) Mechanical engineering and metallurgical technology; (5) Rural construction technology and pott (6) Gobar gas plant without iron holder; and (7) Rural leather proc product technology.

Priced at Rs 15 ($ 5.00), the pu cation is available from the Centre Management Development in R& Planning Division, CSIR Headquart Rafi Marg, New Delhi 110001.

CONFERENCE BRIEFS

Second World Congress o Chemical Engineering

Dr Asghar Husain, head of Simulation, Optimization and Cont group of the Regional Resea Laboratory, Hyderabad, participated the Second World Congress Chemical Engineering held in Montre Canada, 4-9 October 1981. His repo

The congress covered a wide range subjects from fundamental aspects chemical engineering to various p blems and challenges faced by chemical industry today. The are covered were: Economic and tec nological outlooks; Internation cooperation; Canadian industry a engineering; Fossil resource develo ment; Energy and petrochemica Energy · development and utilizatio Nuclear engineering; Fundamenta Unit operations and separation pr cesses; Control; Reaction engineerin Primary industries; Polymer enginee ing; Biochemical and biomedic engineering; and Environmental chem cal engineering.

A symposium on 'Safety in Ammon Plants' and a session devoted chemical engineering education an student problems were the oth features of the congress.

Among the several hundred delegat from all over the world, a few India scientists from CSIR, Engineers Ind Ltd, Bhabha Atomic Research Centr and Indian Institute of Technolog Bombay, attended the congress D L.K. Doraiswamy, Director Nation Chemical Laboratory, Pune, presente

vited talk on 'Technologies for oping nations'.

Asghar Husain presented a paper 'Modelling and simulation of onia synthesis loop' in a poster on in the area 'Control'. The paper, h was well received at the congress, ed to the mathematical modelling a large ammonia plant under ation in the public sector, and lation of its performance on a al computer. All the models of plant were developed in terms of amental physico-chemical pheno- a occurring in each of them, and nent information was generated by ching their outputs with the plant . As a result of this exercise, it was ible to show that additional age of ammonia, worth Rs 16.8 on per annum, could be produced the same plant. The simulation lts were then implemented in the t practice and proved to be correct. he congress also organized a World mical Exposition in which several panies manufacturing chemical pment displayed their products. □

PERSONNEL NEWS

B. Singh appointed CMRS Director

Bhagwant Singh, Acting Director, tral Mining Research Station, nbad, has taken over as Director effect from 29 October 1981.

or an account of Dr Singh's ntific and professional attainments, *CN*, 30 (1980), 87.

n May this year Dr Singh completed udy tour to France, Belgium, FRG USSR, as a member of an expert n on underground coal gasifica- □

Appointments/Promotions

At the National Chemical Laboratory (NCL), Pune, the following have been appointed as Scientist B: Shri D.D. Ravetkar (on promotion) (2 June 1981); Shri S.K. Rawal (6 July 1981); and Dr (Kum.) V.M. Kapoor (3 Aug. 1981).

* * *

At the National Environmental Engineering Research Institute (NEERI), Nagpur, Dr P.V.R. Subrahmanyam (13 Aug. 1981), Shri S.R. Kshirsagar (13 Aug. 1981) and Shri Y.S. Murty (Hyderabad zonal laboratory; 14 Aug. 1981) have been promoted, on assessment, from position Scientist EI to Scientist EII with effect from dates given in parenthesis.

* * *

Also at NEERI, promoted, on assessment, as Scientist EI from position Scientist C are: Shri D. Raguraman (Bombay zonal laboratory; 1 Jan. 1981); Shri R. Paramasivan, Dr K.L. Saxena, Dr H.C. Arora (Kanpur zonal laboratory); and Dr R.P. Mishra (Delhi zonal laboratory), all with effect from 1 March 1981.

* * *

Retirements

Dr D.P. Sen

Dr D.P. Sen, project coordinator, Lipid Technology Discipline, Central Food Technological Research Institute, Mysore, retired on 30 September 1981.

Dr Sen, who joined CFTRI in 1959 as a Junior Scientific Officer and rose to the position of Scientist EII, specialized in fish-processing technology and developed techniques for improving the traditional method of salt curing and drying of fish. As head of CFTRI's experiment station at Mangalore, he established an active group to work on oil sardine fish, and developed complete technology for preparing oil and fish meal from oil sardine. As a result, a commercial fish meal and oil plant is coming up at Karwar.

Dr Sen, who was also heading the CFTRI's experiment stations from 1971, has authored more than 125 research papers, one of which won the Rasoi Award for the best paper in *Journal of Oil Technologists Association of India* for 1977. □

* * *

Shri Mit Singh, officiating Deputy Secretary, CSIR Headquarters, New Delhi, who had assumed charge as Senior Administrative Officer (Selection Grade), NCL, Pune, with effect from 13 August 1981 retired on 31 August 1981 on attaining superannuation. □

PATENTS INFORMATION

Indian Pat. 148708

(Application No. 485/Del/78)

A process for making palatable preparation of *Plantago ovata* seed husk

SATYAWAN SINGH, R.C. NANDI, J.P.S. SARIN & N.M. KHANNA

Central Drug Research Institute, Lucknow

The seed husk of *Plantago ovata* (psyllium, or *isapgol* in Hindi) finds extensive use as a safe laxative and is particularly useful in habitual constipation, chronic diarrhoea, dysentery, etc. It does not irritate the intestines and is specific in a condition when mucous membrane is disturbed by inflammatory conditions. Widely used in USA and West European countries as a household medicine, *isapgol* is included in the pharmacopoeas of India, Britain and many other countries.

While India continues to hold a monopoly in the production and trade of *isapgol* in the world, its export earnings can be substantially increased if the *isapgol* seed husk can be suitably formulated to provides substitutes for the formulations currently made and sold abroad.

The process, covered by the patent, of preparing several tasty palatable formulations of *isapgol* seed husk is precisely to increase our export earnings. The finished products, which are in various forms such as granules, powder, and effervescent powder, have the same swelling and mucilage-forming quality as the raw *isapgol* seed husk. They are more readily acceptable than the raw husk because the stickiness and bulkiness of the raw husk are eliminated by granulation, and the bland taste of

the raw husk is masked by means of sugar, salt, and flavouring agents.

The process, simple enough to be utilized even by a small-scale industry, has been assigned to the National Research Development Corporation of India for commercialization.

The finished products occupy about one-fourth the bulk/volume of the original raw husk, which should substantially save on shipping/freight charges.

[For more information on the topic *see CN*, 29 (1979), 184.] □

PATENTS FILED

574/Del/81: An improved process for the preparation of pure urea stibamine, S.B. Mahato, B.C. Pal & D.K. Ghosh—IICB, Calcutta. □

ANNOUNCEMENT

Symposium on Ultrasonics

A national symposium on Ultrasonics, jointly sponsored by the National Physical Laboratory (NPL), New Delhi, and the Ultrasonic Society of India, will be held at the NPL on 23-24 February 1982. The symposium will cover: High-power ultrasonics; Ultrasonic instruments; Ultrasonic transducer materials and devices; Physics of ultrasound; Medical and biological ultrasonics; Ultrasonic nondestructive testing and acoustic emission; Acoustic microscopy and ultrasonic spectroscopy; Visualization and imaging; Underwater ultrasound; Ultrasound in agricultural research; and related topics.

Further information on the symposium may be obtained from the convener Dr V.R. Singh, Ultrasonics Section, National Physical Laboratory, Hillside Road, New Delhi 110012. □

COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH

ADVERTISEMENT NO. 40/81

The Council proposes to appoint a Scientist F for the National Environmental Engineering Research Institute, Nagpur. The candidate should be conversant with the present problems of research in public health/environmental engineering and be able to undertake and guide research and development work in the institute and provide necessary assistance to industry and to assist the Director in the management of the institute.

Qualifications: (1) High academic qualifications in public health/environmental engineering or related areas with good research and field/operational/design experience in a senior and responsible capacity in one or more of the following fields: (i) water supply engineering, (ii) wastewater treatment, (iii) air pollution control, and (iv) environmental system analysis. (2) About 10 years' experience in the field of water treatment technology/air pollution control systems/waste treatment technology/environmental system analysis. R&D activities with reference to the national programmes in the above areas will be necessary.

Scale: Rs 2000-125/2-2500 plus allowances at Central Government rates. Higher initial pay can also be considered. This is a contractual appointment, but the contract can be extended and the person can also be confirmed. Other conditions of contract will be supplied on request.

Age: Preferably below 50 years.

Scientists/technologists interested may obtain two copies of standard proforma for sending their *curriculum vitae* from the Chief (Administration), Council of Scientific & Industrial Research, Rafi Marg, New Delhi 110001. Completed *curriculum vitae* proforma should be received in this office on or before 31 December 1981. □

ADVERTISEMENT NO. 41/81

The Council proposes to appoint a Scientist F for the Regional Research Laboratory, Bhubaneswar. The major programmes of the laboratory cover the following disciplines: Mineralogy, Metallography, Mineral beneficiation, Pyrometallurgy, Special materials, Forest and marine products, etc. The prospective incumbent is required to provide leadership in the identification, planning, execution and coordination of research projects in extractive metallurgy and mineral beneficiation. He should be able to lead the team of research workers in these fields and command their confidence. He would also assist the Director in the overall management of the laboratory.

Qualifications: (i) High academic qualifications, preferably a Ph.D. degree in metallurgy/chemical engineering/mechanical engineering or an equivalent; and (ii) should have 10 years' experience in a responsible position in an R&D organization in the area of extractive metallurgy/mineral beneficiation or inorganic materials with proven ability to organize, guide and undertake the required consultancy and extension work, and a record of research in the related field.

Age: Preferably below 50 years but relaxable in deserving cases.

Scale: Rs 2000-125/2-2500 plus allowances at the Central Government rates. Higher initial pay can also be considered. This is a contractual appointment for a period of six years but the contract is renewable and the incumbent can also be confirmed. Other conditions of contract v supplied on request.

Scientists/technologists interested may o two copies of the standard proforma for se their *curriculum vitae* from the (Administration), Council of Scientif Industrial Research, Rafi Marg, New 110001. They can also obtain a brochure o aims and objects and the latest annual rep the institute. Completed *curriculum* proforma should be received in this office before 7 January 1982.

ADVERTISEMENT NO. 43/81

It is proposed to appoint two Scientists F fo National Metallurgical Laboratory, Jamshe The prospective candidates should possess academic qualifications in the field mineral/metallurgical engineering, prefe with a doctorate degree in any of the fields, about 15 years' experience in R&D of indust applicable processes/products of which 5 y experience should be in the management of programmes. These are senior-level appointm and involve planning and execution of programmes in collaboration with industry related state-level, national and internat agencies. The expertise of the prospe candidates for the posts should be in the follo fields:

For post 1: (i) Mineral processing, an Electro- and hydrometallurgy.

For post 2: (i) Physical or mechanical metall and (ii) Alloy development, heat-treatment foundry technology.

The prospective candidates should ha proven record of research and should comm the confidence of the research and indu community with ability to conduct, g correlate and sell research results. Experien industry pilot plant besides industrial R experience will be an added advantage. They be required to provide leadership in formulation of R&D programmes and pro and in organizing and coordinating team v and commercial utilization of the result research. They should preferably below 50 y but the age limit can be relaxed in deserving c

The salary scale is Rs 2000-125/2-2500 allowances at Central Government rates. Hi initial pay can also be considered. This contractual appointment for a period of six y The incumbent can also be confirmed. O conditions of contract will be supplied on requ

Scientists/technologists interested may ob two copies of the standard proforma, for sen their *curriculum vitae*, from the C (Administration), Council of Scientific Industrial Research, Rafi Marg, New D 110001. Completed *curriculum vitae* profo should be received in this office on or befor January 1982. They can also obtain a brochur the aims and objects and the latest annual re of the laboratory.

Printed & Published by Y.R. Chadha, Chief Editor, Publications & Information Directorate (PID)
Hillside Road, New Delhi 110012, at PID Photocomposition-cum-Printing Unit
Editor: P.S. Shankar Assistant Editor: Dr B.C. Kashyap

RN 421